

REMARKS

Applicants have amended their claims in order to further define and clarify various aspects of the present invention. Specifically, claims 3, 7 and 12 have been set forth in independent form, as new claims 17, 18 and 19, respectively. In light of these new claims 17-19, claims 3, 7 and 12 have been cancelled without prejudice or disclaimer.

Moreover, claims 1, 5, 9 and 16 have been amended to recite that the first hollow member includes a connecting plate having a portion extending perpendicular to the second hollow member and a portion extending perpendicular to a remaining part of the first hollow member, the friction stir welded joint portion being between the second hollow member and the connecting plate. Claims 13 and 15 have been amended in light of amendments to claim 9, respectively reciting that the connecting plate extends between an exterior surface plate of the first hollow member and an interior surface plate of the first hollow member, and extends to the friction stir welding of the exterior side of the first hollow member and the exterior side of the second hollow member; and reciting that the interior surface of the first hollow member is in substantially the same plane as the connecting plate which extends to the friction stir welding.

In connection with this connecting plate, note, for example, Figs. 9-11, including, for example, structure represented by reference character 111; see also the descriptions in connection therewith on pages 14-16 and 19-21, of Applicants' specification.

Initially, it is respectfully requested that the present amendments be entered. Noting indication of allowable subject matter set forth on page 4 of the Office Action mailed March 1, 2004, it is respectfully submitted that the newly added claims clearly do not raise any new issues, including any issue of new matter; and in light of canceling of claims in the present amendments, it is respectfully submitted that the number of claims to be considered on the merits in the above-identified application after entry of the present amendments is no greater than the number of finally rejected claims. Moreover, noting the definition of the connecting plate as previously considered by the Examiner, (note, e.g., previously considered claims 5 and 13) corrected by the present amendments, it is respectfully submitted that the present amendments do not raise any new issues, including any issue of new matter. In addition, by further defining the car body, including the connecting plate, it is respectfully submitted that the present amendments materially limit any issues remaining in connection with the above-identified application; and, at the very least, present the claims in better form for appeal. Furthermore, noting the new grounds of rejection and new arguments by the Examiner in the Office Action mailed March 1, 2004, it is respectfully submitted that the present amendments are timely.

In view of all of the foregoing, it is respectfully submitted that Applicants have made the necessary showing under 37 CFR § 1.116(c); and that, accordingly, entry of the present amendments is clearly proper.

Applicants note the indication by the Examiner in the first paragraph on page 4 of the Office Action mailed March 1, 2004, that claims 3, 7 and 12 "would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second

paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims". However, a full review of the Detailed Action of the Office Action mailed March 1, 2004, does not indicate any rejection of any of the claims under the second paragraph of 35 USC §112. Accordingly, it is respectfully submitted that claims 3, 7 and 12, written in independent form as new claims 17-19, respectively, should be allowed.

Applicants respectfully submit that the remaining claims in the above-identified application patentably distinguish over the teachings of the references applied by the Examiner in rejecting claims in the Office Action mailed March 1, 2004, that is, the teachings of U.S. Patent No. 6,328,261 to Wollaston, et al., and European Patent Application No. EP 893,189 to Aota, et al., under the provisions of 35 USC §103.

It is respectfully submitted that the references as applied by the Examiner would have neither taught nor would have suggested such a car body as in the present claims, having the underframe and side structure being friction stir welded to each other in a friction stir welded joint portion, and wherein the first hollow member includes a connecting plate having a portion extending perpendicular to the second hollow member and a portion extending perpendicular to a remaining part of the first hollow member, the friction stir welded joint portion being between the second hollow member and the connecting plate. See claim 1; note also claims 5, 9 and 16.

In addition, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such a car body as in the present claims, having the underframe and side structure respectively

formed of first and second hollow members and with the first hollow member including the connecting plate as discussed previously, and wherein the underframe and side structure are welded together at two positions (see claims 1, 5 and 16), especially at exterior and interior sides of the car body (see claim 16); or wherein the friction stir welded joint portion exists on a line of an extension of the connecting plate, which is substantially orthogonal to inner and outer surface plates of the second hollow member and connecting the inner and outer surface plates of the second hollow member (see claim 5); or wherein a joint exists on a line of an extension of an interior surface plate of the second hollow member (of the side structure) and an interior surface plate of the first hollow member (of the underframe) (see claim 16).

Moreover, it is respectfully submitted that the teachings of the applied references do not disclose, nor would have suggested, the other features of the present invention as in the remaining, dependent claims, including use of the fillet weld to weld inner surface plates of the first and second hollow members at the interior side of the car body (note claims 2, 6 and 11); and/or wherein the first hollow member includes an interior surface substantially in the same plane as the connecting plate which extends to the friction stir welding of the exterior side of the first hollow member and the exterior side of the second hollow member (see claim 15).

The invention as claimed in the above-identified application is directed to a car body (for example, a body of a car that runs on rails, such as a railway car). Applicants provide a car body wherein an underframe which, for example, can form a

floor of the car body, and a side structure, can easily and effectively be joined using a friction stir weld. The car body according to the present invention can also easily and effectively be provided with, for example, a good appearance, while having good strength properties.

Applicants achieve these objectives through a car body having hollow frame members including wherein the first hollow member includes a connecting plate having a portion extending perpendicular to the second hollow member (of the side structure) and a portion extending perpendicular to a remaining part of the first hollow member, with the friction stir welded joint portion being provided between the second hollow member and the connecting plate. As can be seen, for example, in Figs. 9-11 of the present application, by providing the connecting plate, friction stir welding can easily be achieved between the underframe and side structure. Moreover, the welding can be provided at, e.g., two positions between the side structure and the underframe, providing a high strength joining while also providing a joining which can have, e.g., a good appearance at an external surface of the car body.

Aota, et al. discloses a friction stir welding technique which is suitable for use in a joining of members of various materials, including, for example, aluminum alloy members, which avoids occurrence of a dent in a joined region of the members. This patent document discloses that at least one of the members to be joined has a thickened part, in cross-section, at the joining region thereof with another member, the thickened part protruding toward the rotary body used to perform the friction stir welding. Note the paragraph bridging columns 2 and 3 of this patent document. In

one embodiment disclosed in Aota, et al., the described friction stir welding method is applied to a car body of railway cars, as described from column 4, line 47 to column 5, line 5. The car body of the railway car (see Fig. 5) includes a side constructive body 41, a roof constructive body 42, a floor constructive body 43 and a constructive body 44 of an end portion at a longitudinal direction. This patent document discloses that the side constructive body 41 is constituted by arranging plural hollow extruded frame members (50, 60) and by joining contacting portions thereof by friction stir welding. This patent document further discloses, in the paragraph bridging columns 4 and 5, that each of the roof constructive body and the floor constructive body is constituted similarly, and that connections between the side constructive body 42 and the roof constructive body 41 and the floor constructive body 43 are carried out using an MIG (Metal electrode Inert Gas) welding.

It is emphasized that Aota, et al. discloses MIG welding as the specific welding for connecting the side constructive body and the floor constructive body. It is respectfully submitted that such disclosure of this patent document would have neither taught nor would have suggested, and in fact would have taught away from, the car body as in the present claims, including wherein the underframe and the side structure are friction stir welded to each other, much less wherein the exterior side of the first hollow member, of the underframe, and the exterior side of the second hollow member, of the side structure, are friction stir welded.

It is emphasized that Aota, et al. contrasts that the plural hollow extruded frame members of the floor constructive body are joined to each other by friction stir

welding, and the plural hollow extruded frame members of the side constructive body are joined to each other by friction stir welding, while the side constructive body and floor constructive body are connected to each other by MIG welding. By contrasting the formation of, e.g., the side constructive body by friction stir welding, while disclosing joining of the floor constructive body and side constructive body using MIG welding, it is respectfully submitted that Aota, et al. teaches away from use of friction stir welding to join the underframe and side structure, as in the present invention.

Furthermore, it is respectfully submitted that Aota, et al. does not provide any particulars with respect to the joining of side constructive body 41 and floor constructive body 43 of the car body of the railway car shown in Fig. 5 and described in column 4, lines 50-57 of Aota, et al. It is respectfully submitted that Aota, et al. would have neither disclosed nor would have suggested the connecting plate as in the present invention, having features as discussed previously, and advantages thereof.

It is respectfully submitted that the additional teachings of Wollaston, et al. would not have rectified the deficiencies of Aota, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Wollaston, et al. discloses friction stir welding of metal, in particular aluminum alloy compounds, to provide a structural airframe component for an aircraft including a friction stir butt welded joint. The component in the region of the butt welded joint may be double curvature in form; and, also, the weld may be of a tapering thickness along its length. See column 3, lines 37-44. As applied by the Examiner,

Wollaston, et al. shows alternative aircraft wing spar configurations with friction stir butt weld 80, 81 (note Figs. 29A-E) at various locations thereof in order to optimize strength, manufacturing requirements as necessary.

Initially, it is emphasized that Wollaston, et al. discloses airframe components for an aircraft, while Aota, et al., as applied by the Examiner, discloses a car body of a railway car. In view of the different structures involved, and different problems arising in connecting with each, it is respectfully submitted that one of ordinary skill in the art concerned with in Aota, et al. would not have looked to the teachings of Wollaston, et al. That is, it is respectfully submitted that Aota, et al. and Wollaston, et al. constitute non-analogous arts.

In any event, even assuming, arguendo, that the teachings of these references were properly combinable, such combined teachings would have neither disclosed nor would have suggested the presently claimed subject matter, including the welded structure of first and second hollow members, with the first hollow member including the connecting plate as recited in the present claims, and advantages thereof as discussed previously.

The contention by the Examiner that Aota, et al. teaches formation of a fillet prior to friction stir welding, is noted. The Examiner refers to reference character 56n in Fig. 7 of Aota, et al., which is a slope face at the thickened part. Such slope face would clearly have neither disclosed nor would have suggested a fillet, as in the present invention. Moreover, it is emphasized that claim 2, among other claims, recites that inner surface plates of the first and second hollow members are welded to each other at the interior side of the car body, by a fillet weld. It is respectfully

submitted that Aota, et al. would have neither taught nor would have suggested the car body of claim 2 (or of claims 6 and 11) having the fillet weld between plates of the hollow members, at the locations, as in the present claims.

Moreover, in the Office Action mailed March 1, 2004, the Examiner has not even referred to a basis in the references concerning the connecting plate, as in, for example, previously considered claims 5 and 13. It is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested the car body as in the present claims, having the connecting plate, and advantages thereof as discussed previously.

In view of the foregoing comments and amendments, entry of the present amendments, and reconsideration and allowance of all claims then remaining in the application, are respectfully requested.

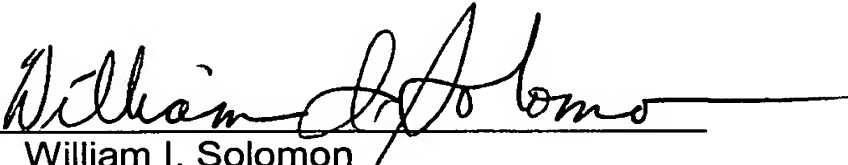
To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135

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(Docket No. 648.40349VX3), and please credit any excess fees to such Deposit
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Respectfully submitted,

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